CONTROL UNIT OMEGA 806

User manual

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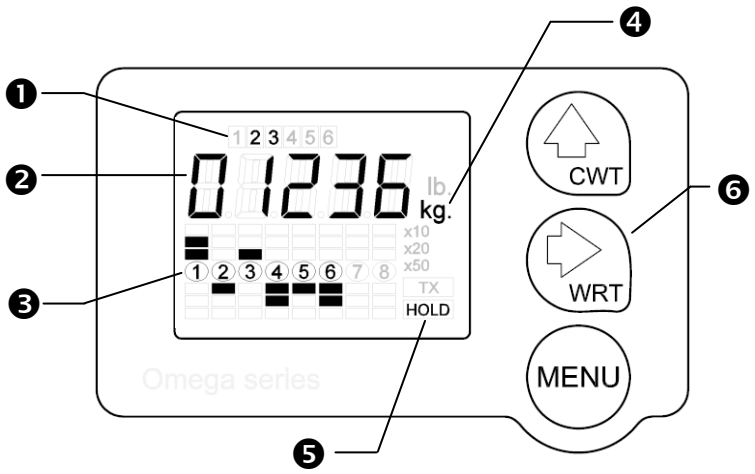
1. DESCRIPTION AND MAIN FEATURES

Dinacell OMEGA 806 is a control unit with several functions:

- Measuring, monitoring and limiting of the load of a elevator.
- Monitoring of the tension of each elevator rope individually to its adjustment.
- Measuring the weight of the elevator car (CWT) or counterweight (CTWT).

This system consists of: (a) inputs for up to eight *sensors, (b)* output for *display in the cabin, (c)* six *relay contacts* to inform of the load levels chosen, (d) two analog outputs according with the measured signal of sensors and (e) input to *hold function*, that inhibit load measure during the elevator travel.

2. DISPLAY AND CONTROL BUTTONS



❶ Show *alarms* status
❷ Show *load* and value of *parameters*
❸ *Rope tension monitor*
❹ Show units
❺ *Hold* function status
❻ Control buttons

Functions of control buttons:

a. Enter/exit of the menu and navigate through parameters.
b. Accept and save modified values.

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a. When load is shown: Enter in the *rope tension monitor* function
b. During menu navigation: Enter to modify a parameter.
c. While modifying a parameter: Chose digit to change.

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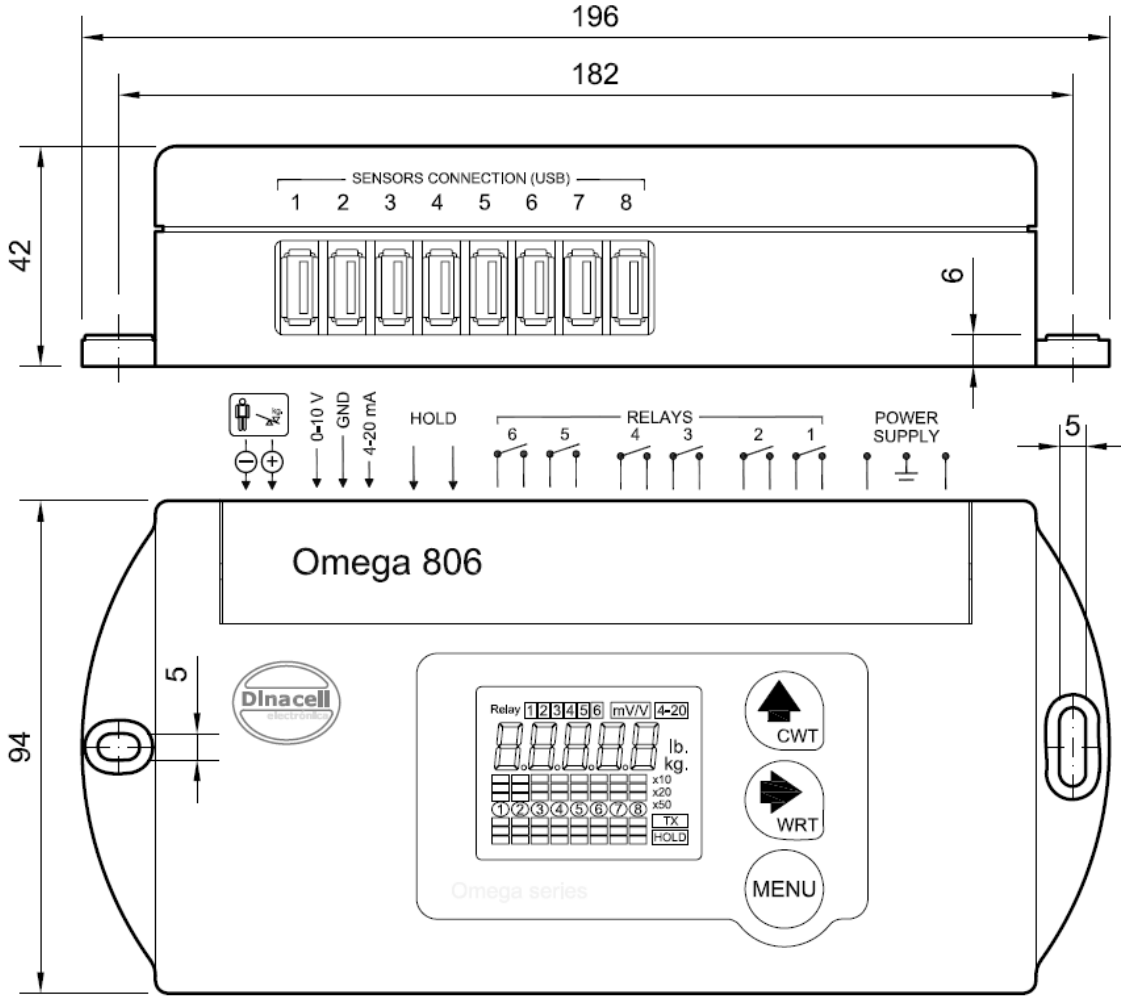
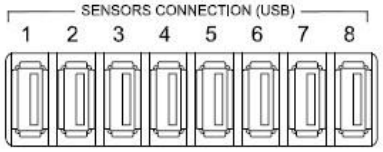
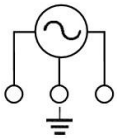
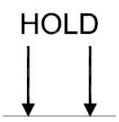
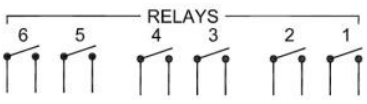
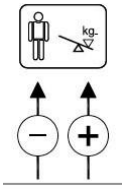
a. During menu navigation: Show the stored value of the selected parameter.
b. While modifying a parameter: Change the blinking digit incrementally from 0 to 9.

3. INSTALLATION AND CONNECTIONS



Sensors input		USB sockets for load cells. (SWK, SWR, TCA, LCA, RTM1, RMT2)
Power supply input		Earthed **80-260V ac** power supply.
Analog outputs		This output reflects the sensors signal over the range 0-10V or 4-20mA. Common signal is GND. (See the *ADDITIONAL FUNCTIONS* chapter).
HOLD input		This function will be activated when an input voltage of 24 to 230V (DC or AC) is applied. (See the *ADDITIONAL FUNCTIONS* chapter).
Relay connections for alarms		*Terminals of the alarm relays.* *(See the alarms section in chapter 7.3)*

Cabin display output		It provides two types of output depending on the CDISP parameter: 1. CDISP = “INCRE”: Progressive display MB-D (two wire connection without polarity). 2. CDISP = “LED”: Under overload it will be an intermittent voltage of 7,5V (max. 75mA) with the polarity shown in the figure.

4. MENU STRUCTURE

The menu has the cyclic structure shown in the following figure.
Press (MENU) button for 2 seconds to enter, then press it repeatedly to move from a parameter to another. Press it for 2 seconds to exit.

88888	Display the value of the measured load
SEnSo	Sets the sensor type (SWK, SWR, TCA, LCA, RTM1 and RTM2)
nSEn	Sets the number of sensors to use
UnITS	Sets measurement units to kg or lb
dIAmE	Sets the elevator ropes diameter (in mm) 🔒 (Not available when SENSO parameter is set to: TCA, SWR, SWK)
LIFT	Sets the elevator roping type (1:1 or 2:1) 🔒 (Not available when SENSO parameter is set to TCA)
IREF	Initial reference when sensors are not installed on the ropes 🔒 (Not available when SENSO parameter is set to TCA)
ZERo	Parameter to adjust measurement with empty car
LOAd	Parameter to adjust measurement with car loaded
ALARM	Sets levels of load that change the relays status
CdISP	Sets the car display type (incremental or LED)
ouTPu	Sets output type (0-10V or 4-20mA)
CHAIn	Sets the weight of the compensation chain

5. HOW TO CHECK OR MODIFY PARAMETERS

Once inside menu and display showing the parameter to be viewed or changed:

- Press CWT to check the current value.
- Press WRT to enter to modify the value:
  - Press WRT to chose the digit to change (blinking) and CWT to change it.
    (if there's no digit blinking, change the value with CWT button directly).
  - Press MENU twice to save the value.

> If MENU button is not pressed the second time before display blink ends, the changes will not be stored.

After any of these operations, the display shows the current parameter.

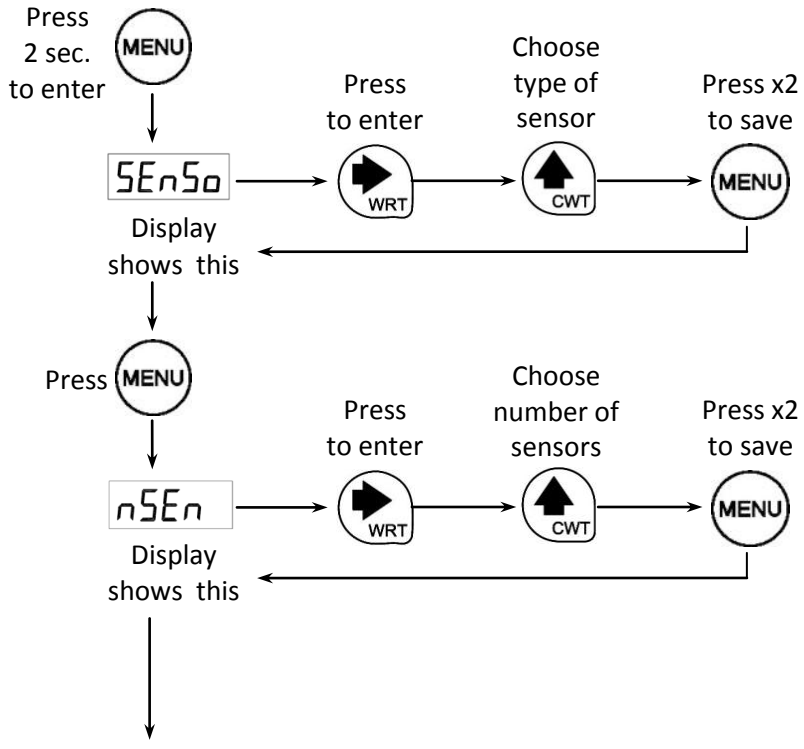
6. SYSTEM CONFIGURATION

> Make sure that the sensors are NOT installed on the ropes

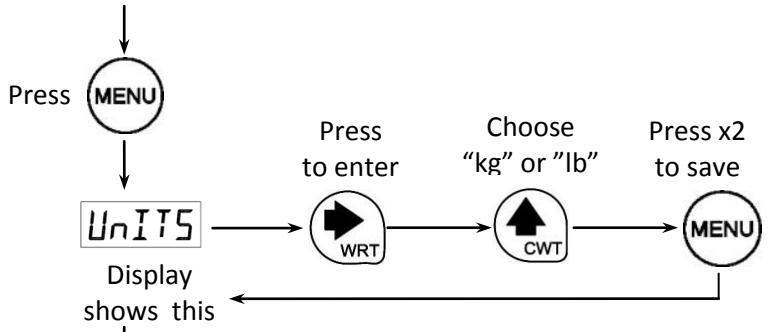
1. Install the control unit with the information of the *INSTALL AND CONNECTIONS* chapter.
2. Connect sensors to the unit Omega.
3. Power up the unit with the correct voltage (see the SPECIFICATIONS chapter).

2. Set parameter SEnSo according with the sensors type that it is going to use .

3. Set parameter nSEn according with the number of sensors that it is going to be connected.

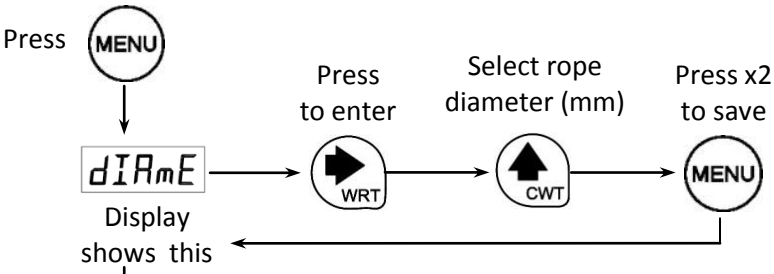


4. Set units of measurement.



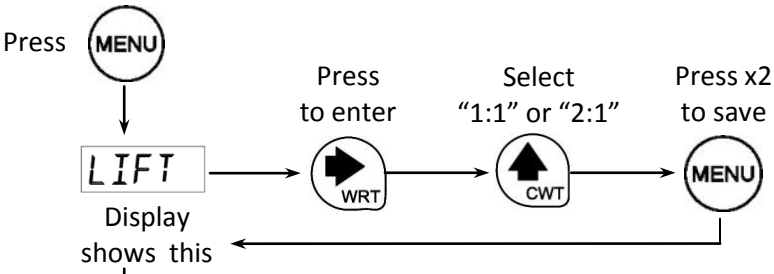
5. Set diameter of ropes.

> Not available when sensor type is TCA, SWR or SWK. In such case skip this step.



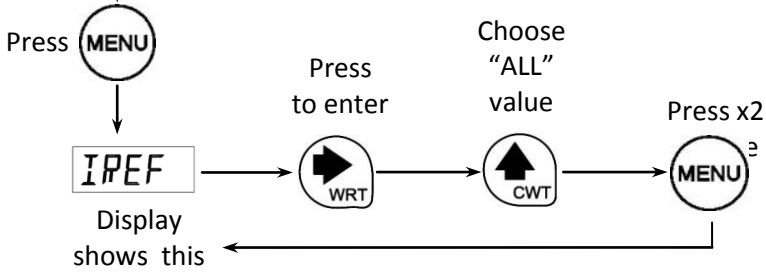
6. Set roping type of elevator.

> Not available when sensor type is TCA. In such case skip this step.



9. Set IREF with the value “ALL”.

> Not available when sensor type is TCA. In such case skip this step.



The IREF operation sets the zero when sensors are not installed on the ropes. After this, the ropes tension can be measured and adjusted individually as well as the car and counter weight load can be measured.

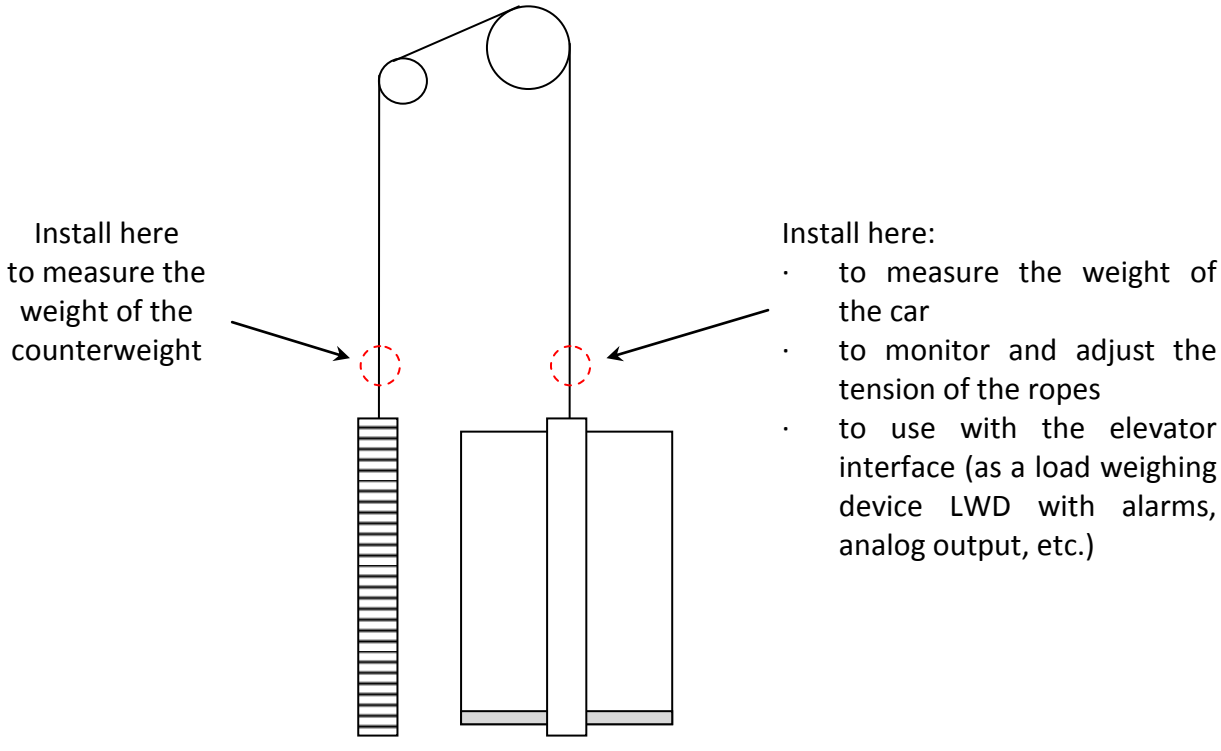
7. OPERATIONS DEPENDING ON THE APPLICATION

This system has three modes of working:

a) can be used to adjust ropes tension (WRT).
(See chapter 7.1)
b) can be used to measure the weight of the car (CWT) or of the counterweight (CTWT).
(See chapter 7.2)
c) can be used as a load weighing device (LWD).
(See chapter 7.3)

⚠	Now install sensors on the ropes

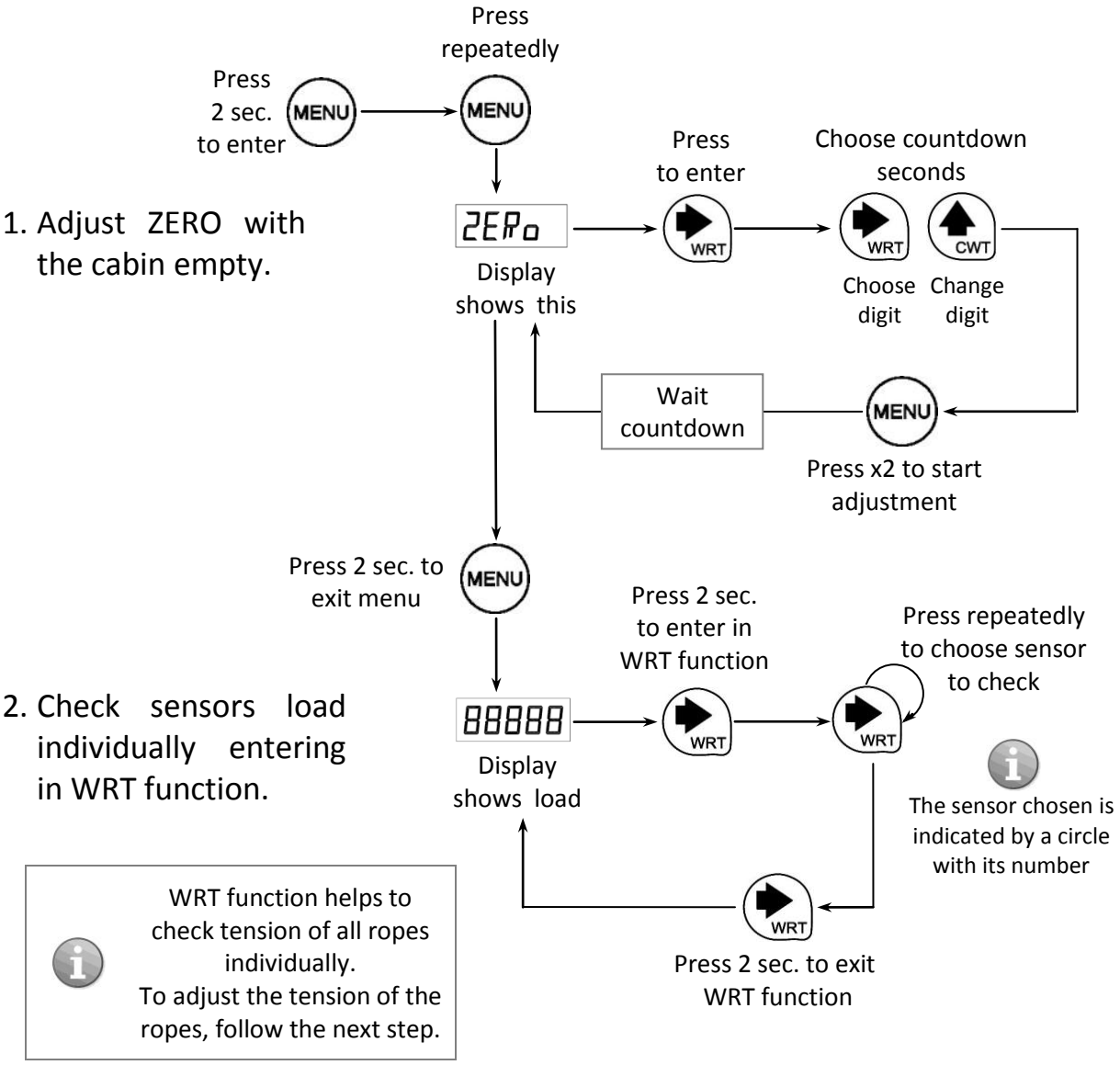
Install the sensors according with the next drawing depending on the application:


Install here
to measure the
weight of the
counterweight
Install here:
· to measure the weight of the car
· to monitor and adjust the tension of the ropes
· to use with the elevator interface (as a load weighing device LWD with alarms, analog output, etc.)

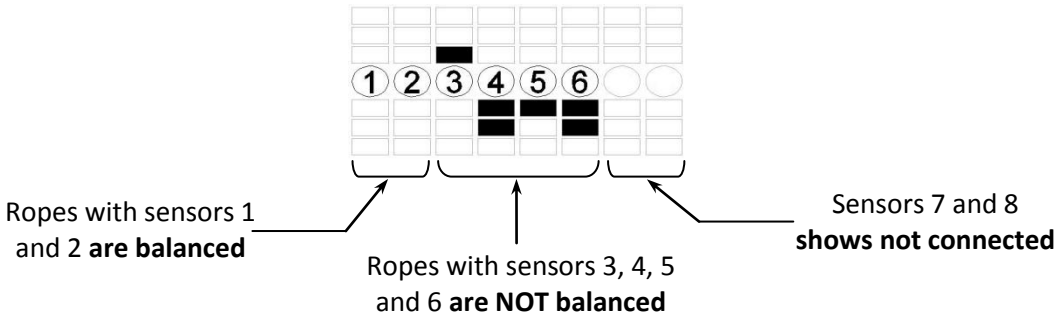
(Drawing for 1:1 roping)

7.1. SYSTEM USED AS A ROPE TENSION MONITOR (WRT)

- Make sure the sensors are installed on the ropes.
- Make sure the cabin is empty and there's no weight on the car roof.



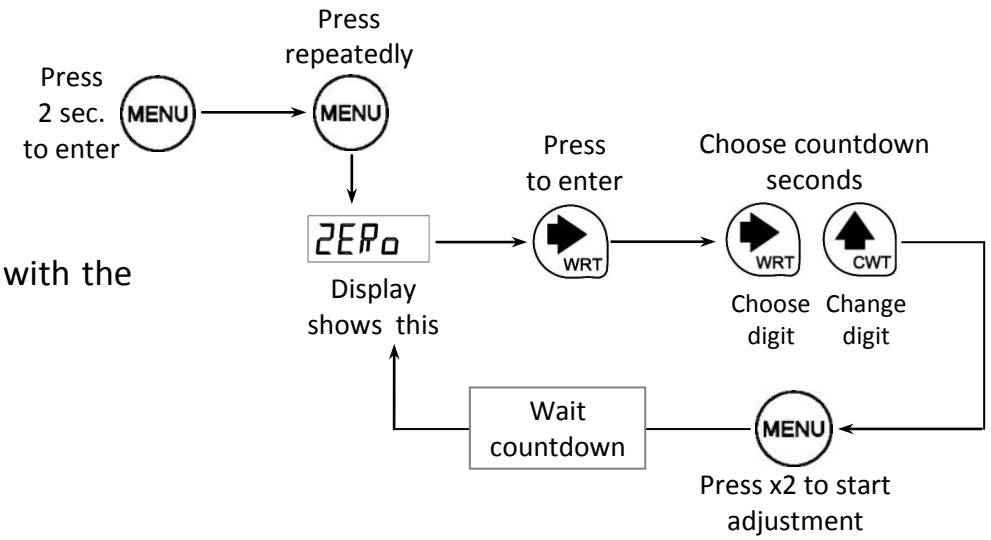
4. Adjust tension of ropes with the help of *rope tension monitor (WRT)* in display, as it is explained with the next figure.


1 2 3 4 5 6
Ropes with sensors 1 and 2 **are balanced**
Ropes with sensors 3, 4, 5 and 6 **are NOT balanced**
Sensors 7 and 8 **shows not connected**

7.2. SYSTEM USED TO WEIGH THE CAR (CWT) OR COUNTERWEIGHT (CTWT)

- Make sure the sensors are installed on the ropes.
- Make sure the cabin is empty and there's no weight on the car roof.

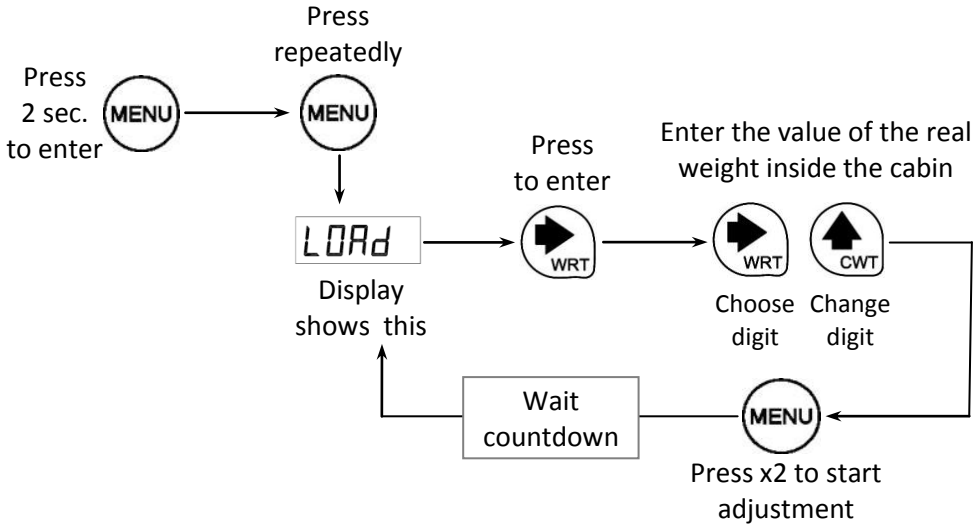
Adjust ZERO with the cabin empty.



Now, after ZERO setting, the measured value of the Car Weight (CWT) or Counterweight (CTWT) can be checked (depending on where the sensors were installed). **Keep pressed the** CWT **button** during 2 seconds and the weight will be shown in display. This value remains stored despite the sensors are uninstalled from the ropes.

The system is factory calibrated, nevertheless, if it is considered that there is a high friction on the guides of the elevator, in order to optimize results on the measurement, an additional operation could be done using a well known weight inside the cabin.

- Make sure that zero adjustment is already done
- Introduce inside the cabin a well known weight (minimum 50% of the elevator full load).



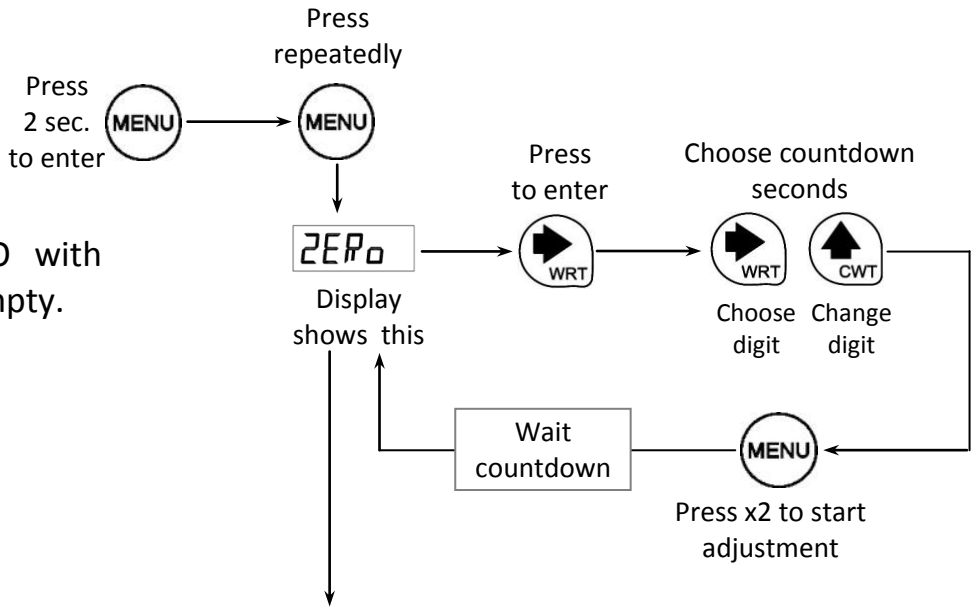
7.3. SYSTEM USED AS A LOAD WEIGHING DEVICE (LWD)

- Make sure the sensors are installed on the ropes.
- Make sure the cabin is empty and there's no weight on the car roof.

1. Drive the elevator car to the middle of the shaft.

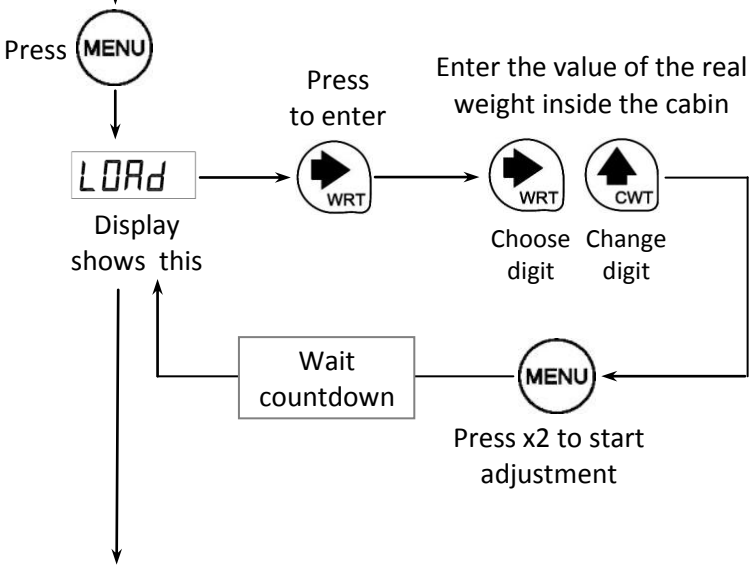
2. Bounce in cabin to insure there's no friction on guides.

3. Adjust ZERO with the cabin empty.



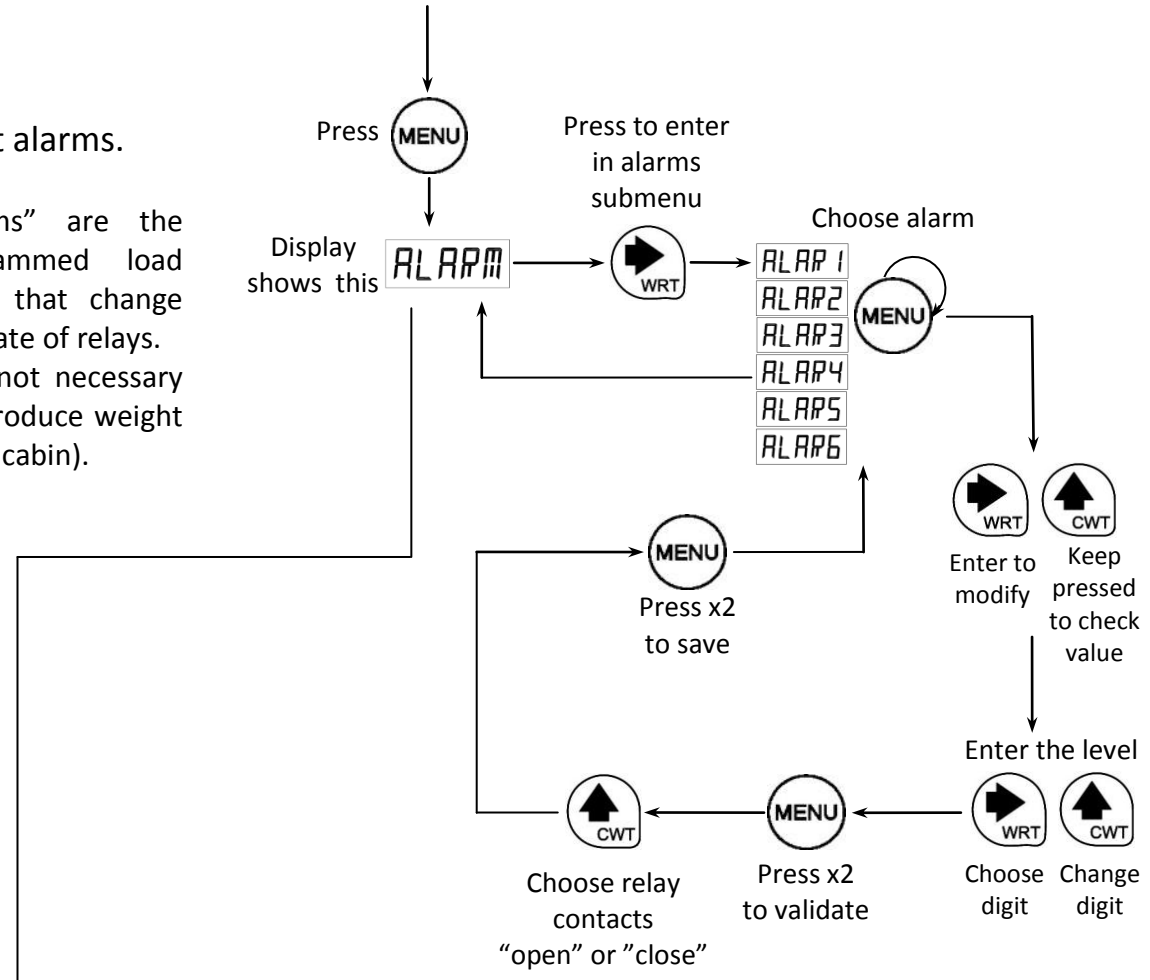
Introduce inside the cabin a well-known weight (minimum 50% of the elevator full load).

5. Adjust LOAD with the cabin loaded.



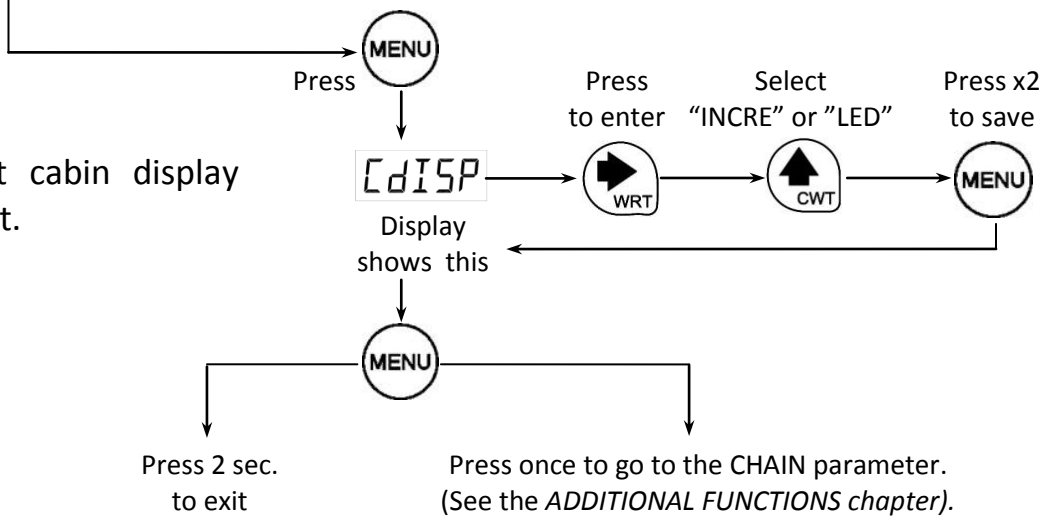
6. Set alarms.

"Alarms" are the programmed load levels that change the state of relays.
(It is not necessary to introduce weight in the cabin).



RELAYS ASSIGNMENT		
Alarm	**Relay**	**Function**
1	1	Relay for **Full Load**.
2	2	Relay for **Overload**.
3	3	Relay for **Unlevel** Wire Rope Tension Fixed assignment: This function cannot be configured in a different alarm relay.
4	4	Additional relays to activate MB-D, LED, buzzer or other warning devices.
5	5	
6	6	

7. Set cabin display output.



8. ADDITIONAL FUNCTIONS

8.1. HOLD FUNCTION

When a voltage in the range 24-230V (DC or AC) is applied in this input, the unit stops to measure and the last value of weight acquired will be shown in display.

The voltage must be applied when the doors close and the it must be removed when the doors open. This ensures that the movement of the cabin will not affect the weighing process and therefore, no relay will be activated during elevator travel.

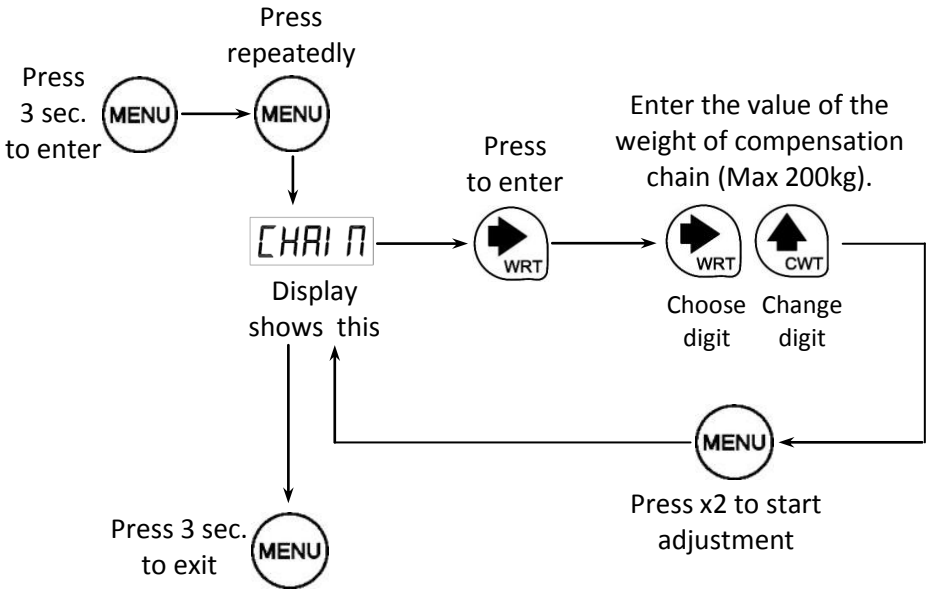
Also, when the doors are closed, since no more people will be entering in the cabin, there is no reason to continue the weighing process. When the doors open, voltage must be removed from the hold input so that the unit can begin measuring the load in the cabin.

8.2. CHAIN COMPENSATION

This function allows to compensate the difference of weight between floors produced by the compensation chain.

The unit needs the HOLD signal active when the doors close to compensate the weight during the elevator movement.

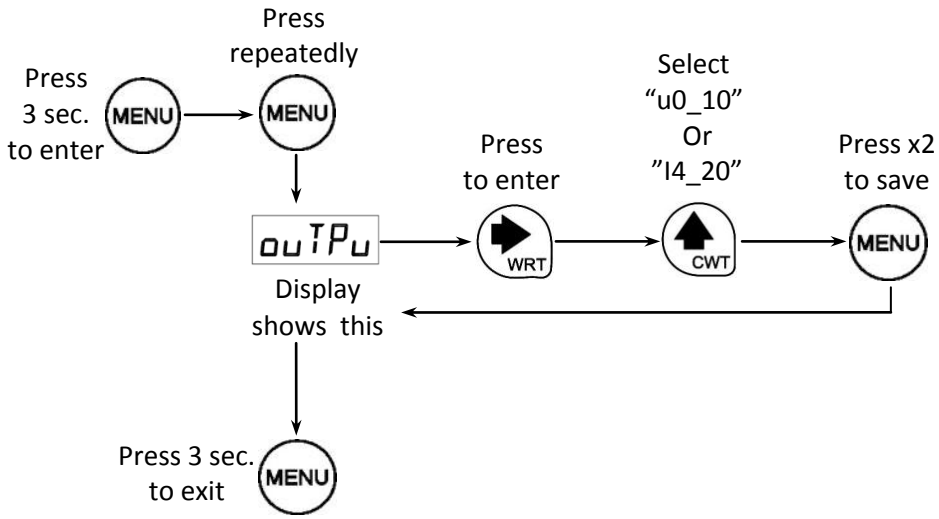
How to set the chain compensation weight (Max. 200 kg):



The default value is zero (00000), this means that no chain compensation is activated.

8.3. ANALOG OUTPUT

The unit is provided with two analog outputs (0-10V and 4-20mA) selectable with the parameter ouTPu:



This function reflects the sensors signal over the range between ZERO and the value sets for ALARM1 (full load):

Parameter ouTPu	**Mode**	**Range**	
u0_10	0-10 volts	When weight ≤ 0kg (empty elevator)	0 V
		When weight ≥ ALARM1 (elevator at full load)	10 V
I4_20	4-20 mA	When weight ≤ 0kg (empty elevator)	4 mA
		When weight ≥ ALARM1 (elevator at full load)	20 mA

Example: Once that the system is completely configured, if ALARM1 is set to 400 kg., when the unit is measuring 200kg. The analog output will be 5V in mode 0-10V and it will be 12mA in mode 4-20mA.

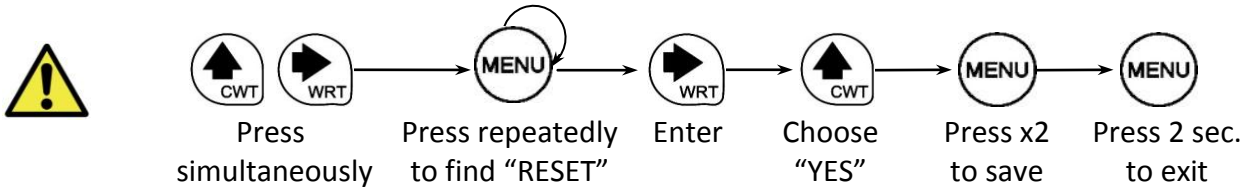
9. ERROR CODES AND TROUBLESHOOTING

When the unit detects some anomaly it will show an error codes of the following:

> **Important:** When an error appears, all alarms are activated and the elevator remains blocked.

	Error description	Action
Err1	Load cell is not properly connected, it or its cable is damaged.	Check the load cells connection.
Err2	Negative overflow. The load cell is giving a negative signal too high.	Check the load cell connection because it should be no negative charge.
Err3	Positive overflow. Load cell is holding a higher load than its nominal value.	load cell by another with higher nominal load.
Err4	Polarity error. This happens when the unit adjusts the weight with the wrong load cell polarity, or the weight is not in the cabin during the adjustment.	Check the load cells connection. Adjust the zero and weight again.
Err6	Loss of data in memory. **Notice**: When this error appears, every relay will remain in OFF state.	The unit must be configured again with the properly values.
Err7	Load cell with very low sensibility. Usually the unit is wrong adjusted.	Adjust the zero and weight again.

RESTORING THE FACTORY SETTINGS (Only in case of configuration problems)

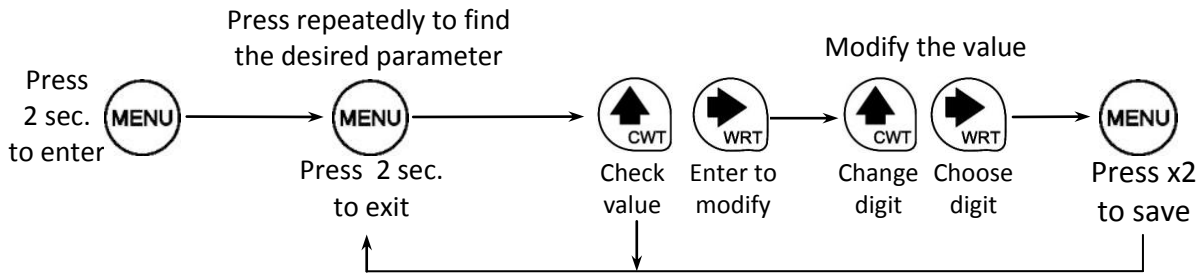


10. SPECIFICATIONS

Power supply characteristics	Short-circuitable. It is not necessary to replace any fuse.
Nominal voltage	80-260V ac
Maximum current	130mA
Nominal frequency	50-60 Hz
Relays Contacts	Normally Open 250V – 3A
Box	IP-50 V0 fireproof plastic.

11. QUICK CONFIGURATION GUIDE

- **Parameters checking or modification**



- **System configuration**

1. Make the necessary connections.
2. Make sure that the sensors are not installed on the ropes.
3. Set parameter SEnSo according with the sensors type.
4. Set parameter nSEn according with the number of sensors.
5. Set UnITS of measurement ("kg" or "lb").

Next three parameters are available depending on the type of sensor selected.

6. Set dIAmE according with the type of ropes of the elevator.
7. Set LIFT according with the roping type of the elevator.
8. Set IPEF with the value "ALL".
9. NOW, install sensors on the ropes as shown in drawing of the chapter 7 depending on the application
10. Adjust ZERO with the cabin empty.

- **Follow next operations "a" or "b" depending on the application:**

a) Operations when system is working as a rope tension monitor (WRT)

1. Check sensors load individually pressing WRT button during 3 seconds and then exit pressing WRT button during 3 seconds.
2. Adjust tension of ropes with the help of *rope tension monitor (WRT)* in display.

b) Configuration when system is working as load weighing device (LWD)

1. After ZERO adjustment: adjust LOAD with a well-known weight inside the cabin.
2. Set desired alarms levels.
3. Set cabin display output ("INCRE" for progressive display or "LED").
4. Set the chain compensation weight (max. 200 kg).